REMARKS

By this amendment, Claims 1, 17 and 18 are amended, and new Claims 31 and 32 have been added. Claims 1-22, 25-27, 31 and 32 are pending in the application. Reconsideration of this patent application is respectfully requested.

Claims 1 and 18 have been amended so that the about 50% to about 100% of the microspores are at a uninucleate stage of development. Support for this amendment may be found on page 9, lines 28-31. Claim 18 has also been amended to indicate that in step (d), the induction medium comprises auxin and arabinogalactan protein. Support for the amendment to step (d) of Claim 18 may found throughout the disclosure, for example on page 20, lines 1-9.

Claim 17 has been amended so that "microspore" now reads –microspore containing plant segment–.

Support for new Claim 31 may be found in Table 6 (Example 6) where the percentage of viable microspores may be calculated from either from the percentage of dead microspores (the percentage of dead microspores determined as a proportion of the number of dead microspores, Column 6, of Table 6, to total microspores, Column 3 of Table 6), or the number of alive microspores (the sum of Columns 4, 5, 7 & 8 of Table 6).

Support for new Claim 32 may be found in Table 6 (Example 6) where the percentage of multicellular microspores (the total of Columns 7 & 8) is determined as a proportion of the total number of microspores (Column 3).

Attached hereto is a marked-up version of the changes made to the specification and claims by the current amendment. The attached page is captioned "Version with markings to show changes made".

Objection under 35 U.S.C. §112

Claims 1 and 17 have been rejected to under 35 USC §112, second paragraph.

Applicant has amended Claim 1 to define substantial as from about 50% to about 100% of the microspores.

Claim 17 has been amended to provide an antecedent basis for the term "microspore".

Removal of the rejection against Claims 1 and 17 under 35 USC §112 is requested.

Objection under 35 U.S.C. §102

Claim 18 has been rejected to under 35 USC §102(b) as being anticipated by Hu et al.

Applicant has amended Claim 18 so that in step (d) of this, the induction medium comprises auxin and arabinogalactan protein. Applicant submits that Hu et al. do not disclose the use of an arabinogalactan protein in the induction medium.

Removal of the rejection to Claim 18 under 35 USC §102(b) is respectfully requested.

Objection under 35 U.S.C. §103

In response to Examiners request, Applicant states, in compliance with 37 CFR 1.56, that the claims of the present invention were commonly owned by the inventors.

Claims 1-12 have been rejected to under 35 USC §103(a) as being unpatentable over Genovesi et al in view of Kreuger et al. Applicant respectfully traverses Examiners rejection.

As Examiner states, Genovesi et al. disclose a method for producing microspores from a plant in the absence of arabinogalactan protein (page 8, line 3 of Office Action). There is no suggestion or disclosure within Genovesi et al. that arabinogalactan may be added to the induction medium for the production of microspores.

Kreuger et al., do not disclose or suggest the pretreatment of microspores to obtain a uninucleate stage prior to microspore isolation and embryo induction, as stated in Claim 1. Furthermore, the effect of arabinogalactan on embryogenesis is only demonstrated on non-embryogenic culture of carrot (Col 6, lines 11-34) or Brassica protoplasts (Col 8, lines 5-15).

Applicant therefore submits that one of skill in the art upon reading Genovesi et al., alone or in combination with Kreuger et al., would not have been lead to the combination of steps as claimed in Claim 1, as neither of these references suggest the steps of pretreatment followed by the use of arabinogalactan for the induction of microspores. As Claims 2-12 depend from Claim 1, Applicant submits that the limitations of Claim 1 are also included within these dependant claims.

The removal of the rejection to Claims 1-12 under 35 USC §103(a) as being unpatentable over Genovesi et al in view of Kreuger et al. is therefore requested.

Claims 18-21 have been rejected to under 35 USC §103(a) as being unpatentable over Genovesi et al in view of Hu et al. Applicant respectfully disagrees with Examiner.

As amended, Claim 18 includes the addition of arabinogalactan in the induction medium. Neither Genovesi et al., or Hu et al., suggest or disclose the use of arabinogalactan within the induction medium. As Claims 19-21 depend from Claim 18, Applicant submits that the limitations of Claim 18 are also included within these dependant claims.

The removal of the rejection to Claims 18-21 under 35 USC §103(a) as being unpatentable over Genovesi et al in view of Hu et al. is therefore requested.

Claims 22, and 25-27 have been rejected to under 35 USC §103(a) as being unpatentable in view of Kreuger et al., Genovisi et al., Hu et al., or Chang et al. Applicant respectfully traverses this rejection.

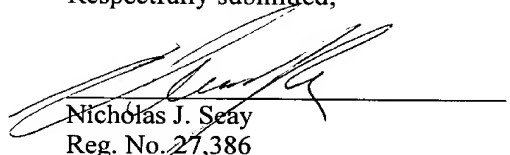
As argued above, there is no suggestion or disclosure within Genovesi et al., or Hu et al. that arabinogalactan may be added to the induction medium for the production of microspores as stated in Claim 1. Change also does not disclose, or suggest the use of arabinogalactan for the production of microspores. As Claims 25-27 depend from Claim 1, they include the limitations of Claim 1.

Furthermore, Kreuger et al. do not disclose or suggest obtaining microspores from a cereal plant as stated in Claim 22.

Therefore, removal of the rejection to Claims 22, and 25-27 under 35 USC §103(a) is respectfully requested.

It is respectfully submitted that the above-identified application is now in a condition for allowance and favourable reconsideration and prompt allowance of these claims are respectfully requested. Should the Examiner believe that anything further is desirable in order to place the application in better condition for allowance, the Examiner is invited to contact the applicant's undersigned attorney at the telephone number listed below.

Respectfully submitted,



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Part/#10

VERSION WITH MARKINGS TO SHOW CHANGES MADE

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Title: EMBRYOGENESIS AND PLANT REGENERATION FROM MICROSPORES

File No.: 411044.90021

In the claims:

Claims 1, 17 and 18 have been amended and new Claims 31 and 32 have been added as follows:

1. (Amended) A method of producing an embryo comprising the steps of:
   (a) harvesting a microspore-containing plant segment from a donor plant;
   (b) incubating said segment under pre-treatment conditions to maintain [a substantial portion] from about 50% to about 100% of microspores at a uninucleate [cell cycle G1 phase] stage of development;
   (c) isolating microspores from said segment; and
   (d) incubating said isolated microspores in an induction medium comprising arabinogalactan protein to induce embryogenesis, thereby producing embryos.

17. (Amended) The method of Claim 16, wherein the microspore containing plant segment, in step (a), is obtained from wheat.

18. (Amended) A method of plant regeneration from microspores comprising the steps of:
   (a) harvesting a microspore-containing plant segment from a donor plant;

(b) incubating said segment under pre-treatment conditions to maintain [a substantial portion] from about 50% to about 100% of microspores at a uninucleate [cell cycle G1 phase] stage of development;

(c) isolating microspores from said segment;

(d) incubating said isolated microspores in an induction medium comprising an auxin and an arabinogalactan protein, to induce the production of embryos;

(e) incubating said embryos in a differentiation medium to produce differentiated embryos; and

(f) regenerating plants from said differentiated embryos.

31. (New) A method of producing a composition of microspores comprising:

(a) harvesting a microspore-containing plant segment from a donor plant;

(b) incubating said segment under pre-treatment conditions to maintain from about 50% to about 100% of microspores at a uninucleate cell cycle;

(c) isolating microspores from said segment; and

(d) incubating said isolated microspores in an induction medium comprising an arabinogalactan protein to produce said composition of microspores comprising greater than about 25% viable microspores after a 10 day incubation period.

32. (New) A method of producing a composition of microspores comprising:

(a) harvesting a microspore-containing plant segment from a donor plant;

(b) incubating said segment under pre-treatment conditions to maintain from about 50% to about 100% of microspores at a uninucleate cell cycle;

(c) isolating microspores from said segment; and

(d) incubating said isolated microspores in an induction medium comprising an arabinogalactan protein to produce said composition of microspores comprising greater than about 15% multicellular microspores, after a 10 day incubation period.